

REMARKS

Claims 1-8 are pending in this application. Claims 1, 4, 5 and 8 are independent claims.

By this amendment, claims 2-4, 6 and 7 are amended for clarity to correct minor informalities contained therein without narrowing the scope thereof.

Reconsideration in view of the above amendments and following remarks is respectfully solicited.

The Claims Define Patentable Subject Matter

The Office Action rejects claims 1-8 under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 5,023,458 to Benveniste et al. (hereafter Benveniste) in view of U.S. Patent No. 5,943,593 to Noguchi et al. (hereafter Noguchi).

This rejection is respectfully traversed.

Applicant respectfully submits that the claimed invention is distinguishable from the combination of Benveniste and Noguchi for at least the following reasons:

The Examiner alleges that the combination of Benveniste and Noguchi discloses the claimed invention as set forth in independent claims 1, 4, 5 and 8. Applicant respectfully disagrees with this allegation.

For example, the Examiner alleges that Benveniste discloses at least one electrode aperture group which includes a plurality of electrode apertures (see Office Action, page 2). However, the Examiner has failed to show where Benveniste discloses how the apertures are arranged within a group.

For instance, in the present invention, at least one electrode aperture group is designated within the multi-aperture electrode. The at least one electrode aperture group includes a plurality of electrode apertures. In the present invention, within the claimed group, the individual electrode apertures are arranged having a particular positional shift or tilt relative to a scan direction.

In contrast with the present invention, Benveniste fails to disclose any type of directional arrangement for the electrode apertures. In fact, Benveniste is completely silent about how the apertures are arranged with reference to a direction within a group. Benveniste merely discloses that there are 288 apertures arranged in the general shape of a hexagon. (see Benveniste, col. 3, lines 40-44). Furthermore, Benveniste fails to even specify a grouping of the apertures. In Benveniste, a total number of apertures is merely given, not a designation of groups of apertures.

Furthermore, Benveniste fails to disclose an arrangement of the apertures relative to a scan direction. In fact, Benveniste expressly discloses that no wafer scanning is needed because the source 10 produces a beam 14 of large enough cross section to treat the implantation surface of the workpiece 22. Also, Benveniste discloses that no scanning electrodes are needed. (see Benveniste, col. 3, lines 30-35).

In other words, Benveniste clearly teaches away from scanning the wafer or using a scanning electrode. (see Benveniste, col. 5, lines 35-38). As such, Benveniste is not at all concerned with a scanning direction or arranging the apertures in any type of scanning direction.

The Examiner concedes that Benveniste fails to disclose scanning of the beams orthogonal to a scan direction of the substrate. (see Office Action, page 2, paragraph 4). In an attempt to show this feature, the Examiner imports Noguchi.

Specifically, the Examiner alleges that Noguchi discloses means of irradiating a specimen by scanning a beam in a direction orthogonal to the irradiation area of the specimen. The Examiner further alleges that it would have been obvious to combine Benveniste's method with the well known technique of orthogonal scanning of ion beams because Benveniste teaches that by controlling the voltage of the scanning electrodes, a uniform pattern of ion doping can be achieved. (see Office Action, page 2, paragraph 4). Applicant respectfully disagrees with the alleged obviousness of combining Benveniste with Noguchi.

For example, as noted above, Benveniste teaches away from using a scanning electrode. The portion of Benveniste that the Examiner is relying on for motivation is related to the Background Art section of Benveniste, which Benveniste is trying to teach away from. Benveniste expressly states that no beam or workpiece scanning is required. As such, applicant respectfully submits that it is unreasonable to say that it is obvious to include scanning in the method of Benveniste.

For at least the reason noted above, applicant respectfully submits that the Examiner is improperly trying to combine the teachings of Benveniste and Noguchi. And, even if they were combinable, which we believe they are not, the combination of references still fail to teach or suggest each and every feature as set forth in the claimed invention.

For instance, the Examiner has absolutely failed to show how the combination of Benveniste and Noguchi discloses sorting the apertures into a plurality of groups in accordance with the densities of the beams of the individual electrode apertures, as set forth in at least dependent claims 2 and 6. We believe the combination of references fail to show this feature.

In addition, the Examiner has absolutely failed to show how the combination of Benveniste and Noguchi discloses electrode aperture groups arranged to form arrays having a tilt relative to the scan direction of the substrate, as set forth in at least dependent claims 3 and 7. Applicant respectfully submits that the combination of references also fail to show this feature.

To establish a *prima facie* case of Obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine reference teachings. Second, there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art and not based on applicant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991). See MPEP 706.02(j).

Applicant respectfully submits that the combination of Benveniste and Noguchi fail to teach or suggest each and every feature as set forth in the claimed invention.

Applicant further respectfully submits that not only does the references fail to teach or suggest each and every feature as set forth in the claimed invention, but that one of ordinary skill in the art would not have been motivated to combine/modify the teachings of Benveniste with Noguchi because there is no teaching or suggestion in any of the references regarding how or why one would modify such systems to arrive at the claimed invention.

Applicant respectfully submits that independent claims 1, 4, 5 and 8 are allowable over the combination of Benveniste and Noguchi for at least the reasons noted above.

As for each of the dependent claims not particularly discussed above, these claims are also allowable for at least the reasons set forth above regarding their corresponding independent claims, and/or for the further features claimed therein.

Accordingly, withdrawal of the rejection of claims 1-8 under 35 U.S.C. §103(a) is respectfully requested.

Conclusion

In view of the foregoing, Applicant respectfully submits that the application is in condition for allowance. Favorable reconsideration and prompt allowance are earnestly solicited.

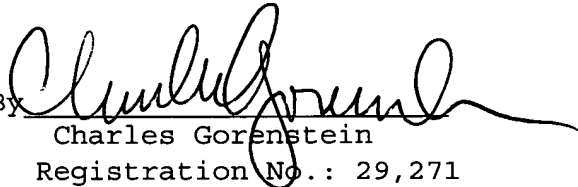
Should the Examiner believe that anything further would be desirable to place this application in better condition for allowance, the Examiner is invited to contact Carolyn T.

Baumgardner (Reg. No. 41,345) at (703) 205-8000 to schedule a Personal Interview.

If necessary, the Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment from or credit any overpayment to Deposit Account No. 02-2448 for any additional fees required under 37 C.F.R. §1.16 or under 37 C.F.R. §1.17; particularly, the extension of time fees.

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Respectfully submitted,

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